Periscope.

PHYSIOLOGICAL.

Some Disputed Points Regarding the Doctrine of Central Localizations.—By J. M. Charcot and A. Pitres (*Archives Cliniques de Bordeaux*, No 9, September, 1894).

I.

DOUBTFUL OR INSUFFICIENTLY DEMONSTRATED MOTOR LOCALIZATIONS.

The only positive motor centres known to-day are those for the extremities, face and tongue.

Some authors believe as definitely localized other motor centres which we believe insufficiently demonstrated: 1. Phonation. 2, Rotation of the head. 3. Conjugate deviation of the eyes. 4. Elevation of the superior eyelid.

(*a*) *Cortical motor centre of the larynx.*

Ferrier '73. Duret '77, Krause '84, by experiments upon dogs, found that irritation and extirpation of the antero-inferior part of the praefrontal gyrus affected, respectively, the vocal function of the animal. Unilateral extirpation of this part caused but little laryngeal trouble, but bilateral extirpation rendered the animal incapable of barking. Masini, '87, Semon and Horsley, '89, confirmed these observations upon monkeys. Observations are too rare to establish anything with certainty in man.

The authors are able to find only four cases reported with persistent aphonia where autopsies have been made, showing circumscribed cortical lesions. In two of these cases the lesions involved the right lobe alone.

Seguin advanced the hypothesis that the cortical laryngeal centre is in the foot of the right third frontal convolution. So many cases of destruction of this part without aphonia have been observed that the hypothesis is not accepted.

The opinion that the centres are bilateral and symmetrical, as in monkeys and dogs, located at the inferior extremity of the region of Rolando in the immediate neighborhood of the motor centre of tongue and inferior facial, is more reasonable but not demonstrated.

(*b*) *Motor centre of the head.*

Ferrier, in electrifying posterior part of the first frontal convolution of monkeys, obtained rotation of head. Beevor and Horsley confirmed this. In man, destructive lesions of foot of first frontal convolution give no paralysis of muscles of neck, while several cases are reported in which foot of first frontal was altered or destroyed unaccompanied with paralysis of muscles of neck.

(*c*) *Centre for conjugate deviation of the head and eyes.*

This symptom complex has been carefully studied, especially by Landouzy and Grasset. These authors localize a centre for these movements at the level or in the neighborhood of the infra-parietal lobule. Our observations do not lead us to accept this centre as demonstrated.

Wernicke and Henschen believe the centre to be located in the infra-parieta lobule. Wernicke analyzed published reported cases and concludes:

I. Conjugate deviation of the eyes is always in relation with a lesion of the infra-parietal lobule or of fibres emanating from it.

2. Lesions of the infra-parietal lobule always produce conjugate deviation of the eyes, if only transitory.

Charcot and Pitres believe the following invalidates Wernicke's conclusions:

1. We have reported cases where lesions of the infra-parietal lobule were not accompanied with conjugate deviation of the eyes.

2. Conjugate deviation of head and eyes may exist without lesion of infra-parietal lobe A case is cited—Right hemiplegia, conjugate deviated eyes toward left. Circumscribed softening of left ascending convolution alone.

(*d*) *Centre for elevating the superior lid.*

Exceptionally in hemiplegia is found a paralysis of the superior eyelid. Grasset and Landouzy place a cortical centre for same in the angular gyrus, and offer a number of corroboratory observations:

1. Softening of the left angular gyrus—incomplete right ptosis.

2. Softening of left angular gyrus—persistent ptosis right superior lid.

3. Softening of left infra-parietal lobule— right ptosis.

Charcot and Pitres hesitate to admit a definitely localized centre on following grounds:

1. Large number of observations where no ptosis existed, yet autopsies showed extensive alterations of the angular gyrus.

2. Ptosis is described in a large number of cases where the lesions reach beyond, and often far beyond, the region of the angular gyrus.

We saw it exist in two cases, with cortical softening of the inferior extremity of the ascending convolutions. In a third case, with softening of ascending frontal and base of second frontal.

II.

DISTURBANCES OF SENSIBILITY IN THEIR RELATION WITH LESIONS OF THE CORTICAL MOTOR ZONE.

Hitzig offered the hypothesis that troubles of motility caused by destruction of the cortex may be due to perturbations of muscular consciousness.

This hypothesis was accepted with modifications by a number of physiologists—Notnagel, Schiff, Munk, etc.

Notnagel explained motor paralysis of cortical origin by perturbations of muscular sense.

Schiff believed lesions of zone called motor caused tactile anæsthesias, and these, secondarily, ataxias of motion rather than real motor paralysis.

Munk generalizes. He thinks that the brain has no direct action upon motility; the motor region is the region where end and are elaborated the sensations of contact, pressure, temperature, position, etc., of various parts of the body. If lesions here cause perturbations of motion, it is simply because they cause total or partial loss of kinesthetic sensations, which excite and direct motility.

Bastian agrees, denying existence of any motor centres. He thinks the Rolandic area is formed by an aggregation of sensory centres, the activity of which excite voluntary motor centres in pons, medulla and spinal cord.

Ferrier, Bechterew, Horsley maintain, on the other hand, the doctrine of the anatomical and functional separation of motor and sensory centres. They affirm that cerebral mutilations limited to the Rolandic area do not cause *per se* any sensory perturbation.